

- 4 -

REMARKS

This paper is supplementary to applicant's response filed October 11, 2004 and is identical to that paper with the sole exception that the discussion relating to the cited Reichhelm patent appearing in the paragraph bridging pages 4 and 5 of applicant's prior response has been amended due to inadvertent errors noted subsequent to the filing of that response.

The claims remain unamended. Claims 1-8 remain in this application and stand for examination. Reconsideration and reexamination are requested in view of the comments made hereinafter.

Rejection of claims 1-8 for obviousness

The Examiner rejects claims 1-8 under 35 U.S.C. 103(a) as being unpatentable over Nutten et al United States Patent 3,428,406 in view of Reichhelm United States Patent 3,361,183 and Bennett United States Patent 4,061,463.

The Examiner's comments directed toward Nutten et al are noted and it is correct that Nutten does not disclose a metering valve nor does Nutten teach an infrared burner. The Examiner points to Reichhelm and to the manual air control and liquid fuel control valves which Reichhelm uses to adjust his start up flame. But Reichhelm uses two valves on his system and both must be adjusted to produce the correct flame. In part this is so because Reichhelm does not use an air aspirated nozzle and does not introduce liquid fuel to his nozzle as does the present invention but, rather, Reichhelm utilises vaporized or gasified fuel at his nozzle. Referring to Figures 1 and 2 of Reichhelm, liquid fuel is introduced to a "gasifying chamber 14" surrounded by a band heater 18. The band heater 18 provides initial heat "...sufficient to effect the initial gasification of the liquid fuel within the gasifying chamber 14." Thereafter, the "...air and gasified fuel are...supplied to the inlet of the burner

- 5 -

nozzle (26)." Reichhelm needs to adjust both air and fuel because there is no aspirating effect at his nozzle as is the case with the present invention where pressurized air is used to draw in the liquid fuel. Reichhelm cannot do this because he has no liquid fuel at the nozzle 26. But applicant does not teach the use of two valves to adjust fuel and air flow to his nozzle. Applicant teaches and claims only one valve to adjust his fuel supply and the use of the Reichhelm valves would lack utility in the burner according to the present invention. There is no teaching or suggestion in Reichhelm that only a fuel valve adjustment could be used. That is so because, again, Reichhelm uses gasified fuel at his nozzle. If he adjusted his fuel supply only, the gasified mixture would not be efficiently combusted since the air supply would have to be adjusted as well. If Reichhelm only adjusted his fuel and not his air, his flame would not be efficient. There is a very narrow window of the percentage of acceptable air in a gasified mixture. If the air falls outside that window, the fuel is not combusted efficiently. This can easily be observed, for example, in a kitchen stove which uses natural gas as its fuel. There is an air inlet to introduce air to the gas in such stoves and the air inlet is readily observed by removing the cover on such a stove. If one blocks some of the air flow with a spoon or otherwise, the flame characteristics will visibly and adversely change. Reichhelm is not a helpful reference since it does not teach or suggest a single adjustment for fuel supply as does the present invention.

And Bennett does not assist the deficiency of Reichhelm. Applicant appreciates that the Examiner is citing Bennett only for his teaching that an infrared burner is a type of burner used in association with an incandescent surface produced by flames produced by the burner. But the Examiner must closely note that the Bennett definition of an infrared burner does not relate to the infrared burner of the present applicant. At col. 1, lines 18-22, Bennett states:

"The second category is the premix type of system in which a combustible mixture

- 6 -

of air or other oxidizing gas is mixed with the fuel before reaching the burner and this mixture is pressurized and discharged from the burner where it ignites. Burners such as infrared burners are within the last category, as is the present invention." (emphasis added)

Applicant's infrared burner uses liquid fuel and air and it is not a premix system. The liquid fuel and air are not mixed before they reach the burner. They are mixed within the burner and not before it. Accordingly, Bennett does not recognize that there are infrared burners of the type described and claimed by the applicant so Bennett is not a helpful reference. And this difference is well recognized in claim 1 under present consideration where it is stated that "...said liquid fuel [is]...introduced to said air aspirated nozzle in liquid form."

The Examiner's comments relating to the operation of the burner in Reichhelm at startup are noted and applicant appreciates that the Examiner feels this startup adjustment would fall within the scope of the claims. Applicant considered further specifying that the air adjustment could take place throughout the operating cycle of the burner including after startup but since Reichhelm is deficient with regards to the essential use of his two valves to adjust both air and fuel, applicant does not consider any further amendments necessary since Reichhelm does not teach or suggest a single valve for air flow adjustment only. For the information of the Examiner, the burner herein claimed is used in field kitchens for the United States military where adjustable BTU output is essential for proper cooking and the single valve adjustment is practical and simple to operate. It is a useful feature of the invention and many thousands of these burners have been sold for use in such field kitchens.

In view of the above, it is believed that the claims patentably define over the Nutten, Reichhelm and Bennett

- 7 -

references taken singly or in combination. Reconsideration and withdrawal of the rejections and objections is requested and allowance of claims 1-8 is earnestly solicited.

Respectfully submitted,

~~INTERNATIONAL THERMAL
INVESTMENTS LTD.~~

Per: _____

John R. Uren
Regn. No. 3464

Date: October 20, 2004

John Russell Uren, P.Eng.
Suite 202, 1590 Bellevue Avenue
West Vancouver, British Columbia V6E 3G2

Telephone: (604) 922-2997 (West Vancouver, Canada)
(360) 945-3411 (Washington State)

email: urenpat@telus.net

response/INT21246v5.wpd